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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/911,613	07/25/2001	Woo-Suk Chung	6192.0221.AA	3461

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EXAMINER
SEFER, AHMED N

ART UNIT	PAPER NUMBER
2826	

DATE MAILED: 08/14/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

CH

Office Action Summary	Application No.	Applicant(s)	
	09/911,613	CHUNG ET AL.	
	Examiner	Art Unit	
	A. Sefer	2826	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 6/2/03

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 4-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,5-10 and 12-15* is/are rejected.

7)☒ Claim(s) *4 and 11* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Response to Amendment

1. The amendment filed on 6/2/03 has been entered; claims 2 and 3 have been cancelled and new claims 9-15 have been added.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seo USPN 6,323,521 in view of Masutani et al. USPN 6,291,136.

Seo disclose (see fig. 4 and col. 6, lines 1-4) a thin film transistor liquid crystal device (TFT LCD), comprising: a substrate; a thin film transistor formed on said substrate, having a source electrode 228 and a drain electrode 229, wherein the drain electrode is formed of multiple layers comprising an uppermost layer formed of MoW; an insulating layer 231 formed over said thin film transistor is formed, and having a contact hole 233 exposing a portion of the drain electrode; and a pixel electrode 235 provided corresponding to the thin film transistor, formed on said insulating layer and connected to the drain electrode through the contact hole, but do not disclose a pixel electrode being formed of a multi-layered conductive layer comprising a lower layer formed of the same material as the uppermost layer of the multiple layers, and an upper layer of Al-containing metal.

Masutani et al disclose (see fig. 7, 8 and 11 and col. 5, lines 26-27 and col. 6 13-16) a thin film transistor liquid crystal device (TFT LCD), comprising: a substrate; a thin film transistor formed on said substrate, having a source electrode 14 and a drain electrode 14 which could be comprised of Mo or W or alloy containing them or laminated film made of them or the lower layer could be formed of Mow and an intermediate layer of metal layer containing Al (as in claim 5); a pixel electrode a pixel electrode 6 which could be comprised of Mo or W or alloy containing them or a laminated film made of them or an upper layer formed of metal Al-containing metal.

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to substitute the ITO pixel electrode with MoW, since that would provide a high reliability LCD. It would have been obvious to form the MoW on the lower layer or upper layer formed of metal containing Al, since it has been held that a mere reversal of the essential working part of a device involves only routine skill in the art. IN re Einstein, 8 USPQ 167.

4. Claims 9, 10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seo USPN 6,323,521 in view of Masutani et al. USPN 6,291,136.

Seo disclose (see fig. 4 and col. 6, lines 1-4) a thin film transistor liquid crystal device (TFT LCD), comprising: a substrate; a thin film transistor formed on said substrate, having a source electrode 228 and a drain electrode 229, wherein the drain electrode is formed of MoW; an insulating layer 231 formed over said thin film transistor is formed, and having a contact hole 233 exposing a portion of the drain electrode; and a pixel electrode 235 provided corresponding to the thin film transistor, formed on said insulating layer and connected to the drain electrode

through the contact hole, but do not disclose a pixel electrode being formed of a multi-layered conductive layer comprising a lower layer formed of the a same material as the drain electrode.

Masutani et al disclose (see fig. 7, 8 and 11 and col. 5, lines 26-27 and col. 6 13-16) a thin film transistor liquid crystal device (TFT LCD), comprising: a substrate; a thin film transistor formed on said substrate, having a source electrode 14 and a drain electrode 14 which could be comprised of Mo or W or alloy containing them or laminated film made of them or the drain electrode comprising a lower layer formed of MoW and an intermediate metal layer containing Al (as in claim 12); a pixel electrode 6 which could be comprised of Mo or W or alloy containing them or a laminated film made of them or an upper layer formed of metal containing Al (as in claim 10).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to substitute the ITO pixel electrode with MoW, since that would provide a high reliability LCD. It would have been obvious to form the MoW on the lower layer or upper layer formed of metal containing Al, since it has been held that a mere reversal of the essential working part of a device involves only routine skill in the art. IN re Einstein, 8 USPQ 167.

5. Claims 6, 7, 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seo in view of Masutani et al. as applied to claim 9 above, and further in view of Matsushima USPN 5,917,563.

The combined references above fail to disclose insulating layer formed of a photo-sensitive organic insulating layer.

Matsushima discloses in fig. 2 an interlayer insulating film 24 composed of a photo-sensitive organic insulating layer through which a contact hole is formed.

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate the teachings of Matsushima, since that would provide a liquid crystal panel with a large angle visibility.

As to claims 6 and 13, Matsushima discloses (see col. 13, lines 44-46) a top gate type polysilicon thin film transistor.

6. Claims 8 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seo in view of Masutani et al. as applied to claim 9 above, and further in view of Hirabayashi USPN 6,358,759.

The combined references above fail to disclose projections that work as micro lens formed on an upper surface of an insulating layer.

Hirabayashi discloses (see col. 21, lines 62-67) projections that work as micro lens formed on an upper surface of an insulating layer.

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate Hirabayashi's teachings since that would increase condensation efficiency of an incident light resulting an LCD with a bright image.

Allowable Subject Matter

7. Claims 4 and 11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to A. Sefer whose telephone number is (703) 605-1227.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (703) 308-6601.

ANS
August 9, 2003

NATHAN J. FLYNN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800